



THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
MANJIT S. CHOWDHARY)
WALTER M. WHITE) Group Art Unit: 1712
Serial No.: 09/501,559) Examiner: Philip C. Tucker
Filed: February 9, 2000) Atty Docket: ECO530/4-2US
Title: IMPROVED HYDRATION OF GUAR) Confirmation No.: 4061
GUM POWDER)

APPEAL BRIEF

**MAIL STOP APPEAL
BRIEF-PATENTS**
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING

I hereby certify that this paper or fee is being deposited with the United States Postal Service with sufficient postage as "FIRST CLASS MAIL" addressed to: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, this 21st day of November, 2003.


Randall C. Furlong, Reg. No. 35,144

Sir:

The applicants hereby submit an original and two copies of this *Appeal Brief* to the Board of Patent Appeals and Interferences in response to the *Final Office Action* mailed March 28, 2003. The Director is authorized to deduct **\$165.00** for the fee for filing this *Appeal Brief* from Vinson & Elkins L.L.P. Deposit Account No. 22-0365/ECO530/4-2US/RCF. The *Notice of Appeal* was apparently received by the Office on July 21, 2003, so this *Appeal Brief* is due November 21, 2003, the filing date having been extended two months by the accompanying Petition for Extension of Time. The Director is hereby authorized to charge the required fee of **\$210.00** to Vinson & Elkins L.L.P. Deposit Account No. 22-0365/ECO530/4-2US/RCF.

I. REAL PARTY IN INTEREST

The assignee of this application is Economy Mud Products Company.

II. RELATED APPEALS AND INTERFERENCES

No other appeals or interferences known to appellant will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-11, 27-32, 34-39, and 41-70 have been rejected and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

The amendment filed on January 22, 2003 has been entered. All previous amendments have also been entered.

V. SUMMARY OF INVENTION

Claims 1, 2, 27, 34, 41, 50, 58, and 66, and claims 3-11, 28-32, 35-39, 42-49, 51-57, 59-65, and 67-70 that depend therefrom, are generally directed to a process of improving the hydration characteristics of guar gum powder, and more specifically to a method including the step of extruding guar gum splits prior to grinding same so as to enable such improved hydration characteristics. *Written Description* at page 2, lines 2-5.

In particular, as described in the written description, in various illustrative embodiments, the inclusion of the step of **extruding** the hydrated splits in the manufacturing process has been

found to create a guar gum powder product which has **advantageous properties over the prior art**. These **advantageous properties** include (1) **increasing the hydration rate and hydration acceleration rate** of the guar gum powder without any corresponding change in particle size, and (2) **providing a hydration acceleration rate** that is less affected by cold temperatures. *Written Description* at page 4, lines 6-11 (emphasis added).

Extrusion is known to be a part of the manufacturing process of products from other crops such as wheat or corn. Where extrusion is used in such processes, however, its purpose is known to be for objectives totally unrelated to **improving hydration characteristics of the product**. Generally its purpose is to shape the product into a desired physical profile. *Written Description* at page 4, lines 12-16 (emphasis added).

It is therefore a technical **advantage** of the present invention to provide a process of making guar gum powder that **hydrates faster** and whose **hydration accelerates faster**, than **prior art powders** of corresponding particle size. The potential benefits of such a product to industrial and commercial applications are described in detail in the “background” section of th[e] disclosure. *Written Description* at page 4, lines 17-21 (emphasis added).

A further technical **advantage** of the present invention is that the inventive process provides a guar gum powder product whose **hydration acceleration rate** is less affected by cold temperatures. The potential benefits of such a product in cold environments are also described in detail in the “background” section. *Written Description* at page 4, lines 22-25 (emphasis added).

VI. ISSUE

Are claims 1-11, 27-32, 34-39, and 41-70 unpatentable under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 4,269,975 to Rutenberg et al. (“the Rutenberg et al. ’975 patent”),

either alone and/or further in view of U.S. Patent No. 5,646,093 to Dino (“the Dino ’093 patent”), U.S. Patent No. 5,990,052 to Harris (“the Harris ’052 patent”), and the portions of Applicants’ own specification cited by the Examiner?

VII. GROUPING OF CLAIMS

Finally rejected claims 1, 2, 27, 34, 41, 50, 58, and 66, and claims 3-11, 28-32, 35-39, 42-49, 51-57, 59-65, and 67-70 that depend therefrom, stand or fall together.

VIII. ARGUMENT

Claims 1-11, 27-32, 34-39, and 41-70 are not rendered obvious by the Rutenberg et al. ’975 patent, either alone and/or further in view of the Dino ’093 patent, the Harris ’052 patent, and the portions of Applicants’ own specification cited by the Examiner.

Each of independent claims 1, 2, 27, 34, 41, 50, 58 and 66 recites that the guar splits are subjected to **both** an **extrusion** step **and** a **flaking** step during processing. For example, independent claim 1 recites “processing the hydrated splits, said processing step including the substeps, in either order, of **flaking** the splits **and** **extruding** the splits” (emphasis added). Independent claims 2, 27, 34, 41, 50, 58, and 66 have similar recitations. Thus, each of these claims requires the limitations of both **extruding** **and** **flaking**. On page 4 of the *Written Description*, lines 6-11, Applicants state, regarding the **advantages** of both **extruding** **and** **flaking**, that:

The inclusion of the step of **extruding** the hydrated splits in the manufacturing process has been found to create a guar gum powder product which has **advantageous properties over the prior art**. These **advantageous properties** include (1) **increasing the hydration rate and hydration acceleration rate** of the guar gum powder without any corresponding change in particle size, and

(2) providing a **hydration acceleration** rate that is less affected by cold temperatures. *Written Description* at page 4, lines 6-11 (emphasis added).

Nothing in the Rutenberg et al. '975 patent teaches or suggests this processing of the hydrated splits, the processing step including the substeps, **in either order**, of **flaking the splits and extruding the splits**, as recited in claims 1, 2, 27, 34, 41, 50, 58 and 66. The Examiner acknowledges on page 2 of the *Final Office Action* mailed March 28, 2003, that "Rutenberg differs from the present invention in that the use of both flaking and extruding, in the preparation of the ground guar is not disclosed." Applicants agree with the Examiner on this point. However, the Examiner proceeds to allege that this limitation would be obvious in view of the Rutenberg et al. '975 patent because "combining such methods would not be patentable, since it would logically flow that the combination would produce the **same effect**, and would **supplement each other**" (emphasis added). On this point, Applicants respectfully disagree.

The Rutenberg et al. '975 patent primarily teaches the use of extruding the guar splits prior to the grinding of the guar splits (col. 6, lines 13-18). The Rutenberg et al. '975 patent does not disclose or even suggest **both extruding and flaking** the guar splits, much less that the **extruding and flaking** can be performed **in either order**, not least because **both extruding and flaking** are never disclosed as being performed **together** in any of the numerous examples given in the Rutenberg et al. '975 patent. Moreover, the Rutenberg et al. '975 patent actually *teaches away* from **both extruding and flaking** the guar splits by downplaying the effectiveness of the **flaking** step. For instance, in Example II, the Rutenberg et al. '975 patent compares the viscosity of guar gums prepared by **extruding** the guar splits prior to grinding with the viscosity of guar gums prepared conventionally by **flaking** the guar splits prior to grinding the guar splits, as in the

prior art (col. 5, line 67–col. 6, line 2, and col. 6, lines 22-68). “The results show that, although the use of flattening (*flaker*) rolls gives a gum with higher viscosity-producing properties than gum prepared without the flattening rolls, **the use of an *extruder* under the same operational conditions gives gums with much higher viscosity-producing properties**” (col. 7, lines 15-20) (emphasis added). Similarly, in Example III, the Rutenberg et al. ’975 patent compares **extruded** and **non-extruded** gums **similarly** processed using varied hydration conditions (time, temperature, and % water on splits), with the results showing “that the **extruded** guar gums **always have higher viscosities** than the **non-extruded** control guar gums even when the hydration conditions are varied and are not the optimum.” (col. 7, lines 30-33, and col. 8, lines 61-64) (emphasis added).

Likewise, in Example IV, the Rutenberg et al. ’975 patent “demonstrates that **extrusion**, even under varying **extruder** conditions which were not the optimum attainable, still produces gums with **improved** viscosity-producing properties,” with the results showing “that **extrusion always improves** the viscosity-producing properties of the resulting gums even when no die is present” (col. 8, line 66, to col. 9, line 2, and col. 9, lines 34-36) (emphasis added). Similarly, in Example VII, the Rutenberg et al. ’975 patent “demonstrates that sorting, used in our usual testing procedure for comparison of the viscosity values, is not necessary and that **extrusion improves** the viscosity-producing properties of the resulting unsorted gum,” with the result that “the screened gum had a viscosity slightly higher than the unscreened gum and that **extrusion considerably improved** the viscosity even when the product was not screened,” where “[i]t should be noted that the unscreened gum will usually have a lower viscosity” (col. 10, lines 17-21, and col. 10, lines 47-52)(emphasis added).

Lastly, in Example VIII, the Rutenberg et al. '975 patent "compares the viscosity evaluation procedure used in this specification with the viscosity evaluation procedure described in U.S. Patent No. 2,891,050 (Example [II]), i.e.[, a] patent which describes the **flaking** (**flattening**) process of the prior art," with the results showing "that the viscosity improvement was due to **extrusion** and not to the evaluation procedure used and that the values were ***much higher*** than those reported in U.S. Patent No. 2,891,050 for the **flaking** (**flattening**) method, i.e.[,] 1025-2400 cps" (col. 10, lines 55-59, and col. 11, lines 17-21) (emphasis added). Notably absent in the Rutenberg et al. '975 patent is any disclosure, teaching, or even a hint of a suggestion or motivation of processing hydrated splits, with the processing step including the substeps, **in either order**, of **flaking the splits and extruding the splits**, as recited in the claims. Nor is there any evidence in the Rutenberg et al. '975 patent of any disclosure, teaching, or even a hint of a suggestion that processing hydrated splits, with the processing step including the substeps, **in either order**, of **flaking the splits and extruding the splits**, as recited in the claims, would have any reasonable expectation of success. To one of ordinary skill in the art, the teaching of the Rutenberg et al. '975 patent, taken as a whole, as it must, is unequivocal and clear, strongly **teaching away from flaking** and strongly teaching instead the advantages of **extruding** rather than **flaking**.

The teachings of a prior art reference **must be taken as a whole** when evaluating **obviousness rather than considered in bits and pieces**. *Panduit Corp. v. Dennison Mfg. Co.*, 1 U.S.P.Q.2d (BNA) 1593, 1597 (Fed. Cir.), *cert. denied*, — U.S. —, 107 S. Ct. 2187 (1987). "It is well settled that a prior art reference is relevant for **all** that it teaches one of ordinary skill in the art." *In re Fritch*, 23 U.S.P.Q.2d (BNA) 1780, 1782 (Fed. Cir. 1992) (emphasis added). There

can be **no motivation or suggestion to combine references as a matter of law** where one of the references **teaches away from the claimed invention**. *In re Fine*, 5 U.S.P.Q.2d (BNA) 1596, 1599 (Fed. Cir. 1988); *In re Gordon*, 221 U.S.P.Q. (BNA) 1125, 1127 (Fed. Cir. 1984). It is by now well established that **teaching away** by the prior art constitutes *prima facie* evidence that the claimed invention is **not obvious**. See, *inter alia*, *In re Fine*, 1599; *In re Nielson*, 2 U.S.P.Q.2d (BNA) 1525, 1528 (Fed. Cir. 1987); *In re Hedges*, 228 U.S.P.Q. (BNA) 685, 687 (Fed. Cir. 1986).

The Examiner attempts to supplement the Rutenberg et al. '975 patent by citing *In re Crockett*, 126 USPQ 186. However, the facts of *In re Crockett* are readily **distinguishable** from those of the present application. The prior art references at issue in *In re Crockett* "clearly teach that **both** magnesium oxide and calcium carbide, **individually**, promote the formation of a nodular structure in cast iron, and it would be natural to suppose that, **in combination**, they would produce **the same effect** and would **supplement each other**." *In re Crockett*, 126 USPQ 186, 188 (emphasis added). "Even assuming, as appellant alleges to be the case, that the two together produce an effect somewhat greater than the sum of their separate effects, we feel that **the idea of combining them would flow logically from the teaching of the prior art** and therefore that a claim to their joint use is not patentable. *In re Heinrich*, 46 CCPA 933, 268 F.2d 753, 122 USPQ 388, **and cases there cited**." *In re Crockett*, 126 USPQ 186, 188 (emphasis added). Moreover, *In re Heinrich*, and the cases cited there, namely, *In re Kepler*, 30 CCPA 726, 132 F.2d 130, 56 USPQ 177, and *In re Busch*, 45 CCPA 766, 251 F.2d 617, 116 USPQ 413, all stand for the proposition that a "patent should not be granted for appellant's discovery of a result

that would flow naturally *from the teachings of the prior art.*" *In re Kepler*, 56 USPQ 177, 180 (emphasis added).

Unlike the prior art references at issue in *In re Crockett*, the Rutenberg et al. '975 patent clearly teaches that "although the use of flattening (*flaker*) rolls gives a gum with higher viscosity-producing properties than gum prepared without the flattening rolls, **the use of an extruder under the same operational conditions gives gums with much higher viscosity-producing properties**" (col. 7, lines 15-20) (emphasis added). Therefore, the Rutenberg et al. '975 patent clearly teaches that *extruding*, **under the same operational conditions**, does **not give the same results as flaking**. Consequently, to one of ordinary skill in the art, referring to nothing other than the teachings of the Rutenberg et al. '975 patent, and without having the benefit of impermissible hindsight reconstruction based on the teachings of the present application, it would **not** be natural to suppose that, **in combination, flaking and extruding, in either order**, would produce **the same effect** and would **supplement each other**, **nor** would the **idea of combining flaking and extruding, in either order, flow logically from the teaching of the prior art**. Instead, to one of ordinary skill in the art, the Rutenberg et al. '975 patent strongly teaches that *extruding* is **far more preferable than flaking**, and, thus, it would **flow logically from the teaching of the Rutenberg et al. '975 patent only to extrude and not to flake at all**.

The MPEP at § 2144 states that legal precedent can provide the rationale supporting obviousness **only** if the facts in the case are **sufficiently similar** to those in the application:

The examiner must apply the law consistently to each application after considering all the relevant facts. If the facts in a prior legal decision are sufficiently similar to those in an application under examination, the examiner may use the rationale used by the court. If the applicant has demonstrated the criticality of a specific limitation, it would not be appropriate to rely solely on case law as the rationale to support an obviousness rejection. "The value of the

exceedingly large body of precedent wherein our predecessor courts and this court have applied the law of obviousness to particular facts, is that there has been built a wide spectrum of illustrations and accompanying reasoning, that have been melded into a fairly consistent application of law to a great variety of facts.” *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990).

The facts in *In re Crockett* are not **sufficiently similar** to those here. In *In re Crockett*, distinct references effectively taught that two different processes, A and B, would each produce the **same** result, so that process A and process B could then be **logically combined** to produce process A+B. Here, however, the Rutenberg et al. '975 patent **alone** effectively teaches that two different processes, **flaking** and **extruding**, each produce **very different** results, with **extruding** producing a result that is **far superior** to the result of **flaking**. One of ordinary skill in the art would therefore have had **no logical motivation** to **combine flaking together with extruding**. At best, **logically**, one of ordinary skill in the art would have expected such a combination to produce a result that was **inferior** to the result of **only extruding**. Consequently, one of ordinary skill in the art could **not** have had any **reasonable expectation of success** in **combining flaking together with extruding**, given the teachings of the Rutenberg et al. '975 patent and the **logical** inferences drawn therefrom.

The Examiner has alleged that “Applicant[s] ha[ve] not also shown any superior and unexpected results from the teachings of the specification, an affidavit or declaration to show that the properties of the present product are superior and unexpected, over the properties of the extruded product of Rutenberg, which could render the teachings therein nonobvious.” *Office Action* mailed March 28, 2003, at page 6 (underlined emphasis in original, bold emphasis added). Applicants respectfully disagree.

As described above, on page 4 of the *Written Description*, lines 6-11, Applicants state, regarding the *advantages* of both **extruding and flaking**, that:

The inclusion of the step of **extruding** the hydrated splits in the manufacturing process has been found to create a guar gum powder product which has **advantageous properties over the prior art**. These **advantageous properties** include (1) **increasing the hydration rate and hydration acceleration rate** of the guar gum powder without any corresponding change in particle size, and (2) **providing a hydration acceleration rate** that is less affected by cold temperatures. *Written Description* at page 4, lines 6-11 (emphasis added).

Regarding the Examiner's § 103(a) rejections of independent claims 1, 27, 34 and 66 as being allegedly unpatentable over the Rutenberg et al. '975 patent in view of the Dino '093 patent, the Harris '052 patent, and the portions of Applicants' specification cited by the Examiner, Applicants submit that, contrary to MPEP § 2143, the Examiner has failed to make out a *prima facie* case of obviousness in rejecting independent claims 1, 27, 34 and 66 in that (1) the Examiner has failed to cite references that teach or suggest all of the elements recited in the rejected claims, and (2) the Examiner has failed to articulate a suggestion to combine the references with a reasonable expectation of success.

Applicants respectfully submit that the Rutenberg et al. '975 patent does not teach or suggest the foregoing methods recited in claims 1, 27, 34 and 66 for all of the same reasons set forth above in regard to such claims. Moreover, contrary to MPEP §§ 2143.01 and 2143.02, the Examiner has failed to articulate a suggestion to combine the Rutenberg et al. '975 patent with the Dino '093 patent, the Harris '052 patent, and the portions of Applicants' specification cited by the Examiner. The *prima facie* case of obviousness is thus yet further lacking.

As described above, the Rutenberg et al. '975 patent discloses hydrating, extruding, and grinding guar splits to produce a guar gum (col. 6, lines 22-26). The Rutenberg et al. '975 patent

teaches that extruding the guar splits before grinding results in a guar gum with a higher viscosity than a guar gum produced by flaking the guar splits prior to grinding the guar splits (col. 5, line 65 to col. 6, lines 1-3; col. 7, lines 15-20). The Dino '093 patent teaches the use of reacting guar splits in a reactor with various chemicals to produce chemically altered guar products (col. 6, lines 5-28). The Harris '052 patent teaches the use of guar gum splits, water, and chemicals to form a gel comprising a chemically altered form of guar (col. 8, lines 35-38). Nothing in the Dino '093 patent and/or the Harris '052 patent teaches, discloses, or even suggests improving the hydration rate and hydration acceleration rate of a guar gum powder by **extruding and flaking** the guar splits. Moreover, nothing in Applicants' present specification teaches, discloses, or even suggests that improving the hydration rate and hydration acceleration rate of a guar gum powder by **extruding and flaking** the guar splits was well known in the art at the time the present application was filed.

Further, it is respectfully submitted that it would not have been obvious to modify the Rutenberg et al. '975 patent, the Dino '093 patent, the Harris '052 patent, and/or the portions of Applicants' specification cited by the Examiner to arrive at the invention recited by claims 1, 2, 27, 34, 41, 50, 58 and 66. It is well-settled that a reference must provide some motivation or reason for one skilled in the art (working without the benefit of hindsight reconstruction using the applicants' specification) to make the necessary changes in the disclosed device or method. The mere fact that a reference may be modified in the direction of the claimed invention does not make the modification obvious unless the reference expressly or impliedly teaches or suggests the desirability of the modification. *In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984); *Ex*

parte Clapp, 227 USPQ 972, 973 (Bd. App. 1985); *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. App. 1984). Indeed, the Federal Circuit stated:

... To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction--an illogical and inappropriate process by which to determine patentability. *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). The invention must be viewed not after the blueprint has been drawn by the inventor, but as it would have been perceived in the state of the art that existed at the time the invention was made. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed. Cir. 1985).

Sensonics Inc. v. Aerosonic Corp., 38 USPQ2d 1551, 1554 (Fed. Cir. 1996).

The Rutenberg et al. '975 patent, the Dino '093 patent, the Harris '052 patent, and/or the portions of Applicants' specification cited by the Examiner fail to meet the basic requirement for a finding of obviousness established by the courts in *Sensonics*, *Gordon*, *Clapp*, and *Chicago Rawhide*. There is no suggestion in the Rutenberg et al. '975 patent, the Dino '093 patent, the Harris '052 patent, and/or the portions of Applicants' specification cited by the Examiner to modify the processes disclosed therein in the direction of the present invention, nor is there any suggestion of the desirability of such modifications (*i.e.*, processing the hydrated splits, the processing step including the substeps, **in either order**, of *flaking the splits* *and extruding the splits*). In fact, the Rutenberg et al. '975 patent actually **teaches away** from the inclusion of the flaking step in the process by downplaying the viscosity-enhancing effects of the flaking step. (col. 7, lines 15-20). Thus, it is respectfully submitted that the ordinarily skilled artisan would have had no motivation to modify the references as suggested by the Examiner.

Moreover, independent claim 41 recites "processing the hydrated splits, said processing step including the substeps, **in either order**, of *flaking the splits* *and extruding the splits*" and

“grinding said processed splits into a powder, **the powder disposed to hydrate faster than a corresponding powder made without the extruding substep**” (emphasis added). Claims 50, 58, and 66 have similar recitations. The Rutenberg et al. ’975 patent, the Dino ’093 patent, the Harris ’052 patent, and/or the portions of Applicants’ specification cited by the Examiner do not disclose, teach or suggest processing the hydrated splits, the processing step including the substeps, **in either order, of flaking the splits and extruding the splits** and grinding said processed splits into a powder, **the powder disposed to hydrate faster than a corresponding powder made without the extruding substep**, as recited in the claims.

The Examiner admits that the Rutenberg et al. ’975 patent “does not teach the hydration rate properties at specific temperatures disclosed in claims 41-70.” *Final Office Action* mailed March 28, 2003, at page 3. The Examiner attempts to supplement the Rutenberg et al. ’975 patent by citing *In re Dillon*, 16 USPQ2d 1897. In particular, the Examiner makes reference to:

... There is no question that all evidence of the properties of the **claimed compositions** and the prior art must be considered in determining the ultimate question of patentability, but it is also clear that the discovery that a **claimed composition** possesses a property not disclosed for the prior art subject matter, does not by itself defeat a *prima facie* case. [*In re*] *Shetty*, 566 F.2d [81,] 86, 195 USPQ [753,] 756. Each situation must be considered on its own facts, but it is not necessary in order to establish a *prima facie* case of obviousness that both a structural similarity between a **claimed** and prior art **compound** (or a key component of a **composition**) be shown and that there be a suggestion in or expectation from the prior art that the **claimed compound** or **composition** will have the same or a similar utility *as one newly discovered by applicant*.

In re Dillon, 16 USPQ2d at 1901 (italic emphasis in original, bold emphasis added).

However, the facts of *In re Dillon* are readily **distinguishable** from those of the present application. The claims at issue in *In re Dillon* were claims to a **compound** or a **composition**, **not method claims**, like all the claims on appeal here. Indeed, in the *Office Action* mailed

October 22, 2002, the Examiner stated that “[T]he increasing of hydration rates is a property which according to case law (*In re Dillon*, supra) does not alone provide a patentable distinction” and that “**Applicant is *not* claiming a *method* in which such might be distinguishing.**” *Office Action* mailed October 22, 2002 at page 6 (underline emphasis in original, bold emphasis added). Applicants respectfully disagree. Unlike in *In re Dillon*, here Applicants **are** claiming a **method** in which such **is** distinguishing, the Examiner’s assertions to the contrary notwithstanding.

As described above, the MPEP at § 2144 states that legal precedent can provide the rationale supporting obviousness **only** if the facts in the case are **sufficiently similar** to those in the application. The facts in *In re Dillon* are not **sufficiently similar** to those here. In *In re Dillon*, the Federal Circuit stated:

We make no judgment as to the patentability of claims that Dillon might have made and properly argued to a **method** directed to the novel aspects of her invention. ... The materials used in a **claimed process as well as the result obtained therefrom, must** be considered along with the specific nature of the process, and the fact that new or old, obvious or nonobvious, materials are used or result from the process are only factors to be considered, rather than conclusive indicators of the obviousness or nonobviousness of a **claimed process**. When **any applicant properly presents and argues suitable *method* claims**, they should be examined in light of all these relevant factors.

In re Dillon, 16 USPQ2d at 1903 (emphasis added). As described above, independent claim 41 recites “processing the hydrated splits, said processing step including the substeps, **in either order, of flaking the splits *and* extruding the splits**” and “grinding said processed splits into a powder, **the powder disposed to hydrate faster than a corresponding powder made without the extruding substep**” (emphasis added). Claims 50, 58, and 66 have similar recitations. Unlike in *In re Dillon*, here Applicants **have** properly presented and argued **suitable *method* claims**. Moreover, the Rutenberg et al. ’975 patent, the Dino ’093 patent, the Harris ’052

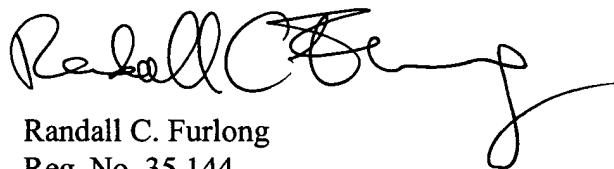
patent, and/or the portions of Applicants' specification cited by the Examiner do not disclose, teach or suggest processing the hydrated splits, the processing step including the substeps, **in either order**, of **flaking the splits and extruding the splits** and grinding said processed splits into a powder, **the powder disposed to hydrate faster than a corresponding powder made without the extruding substep**, as recited in the claims. Thus, it is respectfully submitted that the ordinarily skilled artisan would have had no motivation to modify the references as suggested by the Examiner, in view of *In re Crockett*, and/or *In re Dillon*, and/or otherwise.

Therefore, for all the above reasons, Applicants respectfully request that the rejection of claims 1, 2, 27, 34, 41, 50, 58, and 66, and claims 3-11, 28-32, 35-39, 42-49, 51-57, 59-65, and 67-70 that depend therefrom, under 35 U.S.C. §103(a) be reversed.

Conclusion.

The applicants contend that the prior art does not render obvious any of the pending claims. The applicants respectfully request that the rejections of all of the claims be reversed.

Respectfully submitted,



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November 21, 2003

APPENDIX

Claims involved in this appeal:

1. A method of manufacturing a powder having improved hydration characteristics, the method comprising the steps of:
 - (a) hydrating guar gum splits;
 - (b) processing the hydrated splits, said processing step including the substeps, in either order, of flaking the splits and extruding the splits;
 - (c) grinding said processed splits into a powder; and
 - (d) drying the powder.
2. A method of manufacturing a powder having improved hydration characteristics, the method comprising the steps of:
 - (a) hydrating guar gum splits, in which the guar gum splits comprise polygalactomannan;
 - (b) processing the hydrated splits, said processing step including the substeps, in either order, of flaking the splits and extruding the splits;
 - (c) grinding said processed splits into a powder; and
 - (d) drying the powder.
3. The method of claim 1, in which the guar gum splits have been chemically modified.
4. The method of claim 1, in which the guar gum splits have been genetically modified.
5. The method of claim 1, further including the step of screening the powder after drying.
6. The method of claim 1, in which:
the splits are hydrated in step (a) to about a 20%-80% moisture content at about 80-200 degrees F;

the hydrated splits are extruded in step (b) through a 2"-8" diameter barrel; and the powder is dried in step (d) to a 1%-10% moisture content.

7. The method of claim 6, in which said dried powder is then screened through a 100 mesh sieve.

8. The method of claim 1, in which the splits are hydrated in step (a) to about a 20%-80% moisture content at about 80-200 degrees F.

9. The method of claim 1, in which the hydrated splits are extruded in step (b) through a 2"-8" diameter barrel.

10. The method of claim 1, in which the powder is dried in step (d) to a 1%-10% moisture content.

11. The method of claim 2, in which the powder is screened in said screening step through a 100 mesh sieve.

27. A method of manufacturing a thickening agent for fluids, the method comprising the steps of:

- (a) hydrating plant seed endosperms that contain a polymer having fluid thickening properties;
- (b) processing the hydrated endosperms, said processing step including the substeps, in either order, of flaking the endosperms and extruding the endosperms;
- (c) grinding said processed endosperms into a powder; and
- (d) drying the powder.

28. The method of claim 27, in which the plant seed endosperms are taken from guar plants.

29. The method of claim 27, in which said polymer is a polysaccharide.

30. The method of claim 27, in which said polymer is polygalactomannan.

31. The method of claim 27, in which the plant seed endosperms have been chemically modified.

32. The method of claim 27, in which the plant seed endosperms have been genetically modified.

34. An improved method for manufacturing a fluid thickener in powder form wherein plant seed endosperms are hydrated, flaked, ground and dried, the endosperms containing a polymer having fluid thickening characteristics, the improvement comprising:

extruding the endosperms after hydrating but before grinding, said extruding performed either before or after the endosperms are flaked.

35. The improvement of claim 34, in which the plant seed endosperms are taken from guar plants.

36. The improvement of claim 34, in which said polymer is a polysaccharide.

37. The improvement of claim 34, in which said polymer is polygalactomannan.

38. The improvement of claim 34, in which the plant seed endosperms have been chemically modified.

39. The improvement of claim 34, in which the plant seed endosperms have been genetically modified.

41. A method of manufacturing a powder having improved hydration characteristics, the method comprising the steps of:

- (a) hydrating guar gum splits;
- (b) processing the hydrated splits, said processing step including the substeps, in either order, of flaking the splits and extruding the splits;
- (c) grinding said processed splits into a powder, the powder disposed to hydrate faster than a corresponding powder made without the extruding substep in step (b); and
- (d) drying the powder.

42. The method of claim 41, wherein the powder is disposed to comprise a hydration acceleration rate that is faster than a corresponding powder made without the extruding substep in step (b).

43. The method of claim 41, wherein the powder is disposed to comprise a hydration acceleration rate that is slowed down less by lower temperature than a corresponding powder made without the extruding substep in step (b).

44. The method of claim 41, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F.

45. The method of claim 41, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 40 degrees F.

46. The method of claim 41, wherein the powder is disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F.

47. The method of claim 41, wherein the powder is disposed to achieve about 50% hydration after about 90 seconds at about 40 degrees F.

48. The method of claim 41, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F and after about 5 minutes at about 40 degrees F, and wherein the powder is further disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F and after about 90 seconds at about 40 degrees F.

49. The method of claim 41, further including the step of screening the powder after drying.

50. A method of manufacturing a thickening agent for fluids, the method comprising the steps of:

- (a) hydrating plant seed endosperms that contain a polymer having fluid thickening properties;
- (b) processing the hydrated endosperms, said processing step including the substeps, in either order, of flaking the endosperms and extruding the endosperms;
- (c) grinding said processed endosperms into a powder, the powder disposed to hydrate faster than a corresponding powder made without the extruding substep in step (b); and
- (d) drying the powder.

51. The method of claim 50, wherein the powder is disposed to comprise a hydration acceleration rate that is faster than a corresponding powder made without the extruding substep in step (b).

52. The method of claim 50, wherein the powder is disposed to comprise a hydration acceleration rate that is slowed down less by lower temperature than a corresponding powder made without the extruding substep in step (b).

53. The method of claim 50, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F.

54. The method of claim 50, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 40 degrees F.

55. The method of claim 50, wherein the powder is disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F.

56. The method of claim 50, wherein the powder is disposed to achieve about 50% hydration after about 90 seconds at about 40 degrees F.

57. The method of claim 50, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F and after about 5 minutes at about 40 degrees F, and wherein the powder is further disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F and after about 90 seconds at about 40 degrees F.

58. An improved method for manufacturing a fluid thickener in powder form wherein plant seed endosperms are hydrated, flaked, ground and dried, the endosperms containing a polymer having fluid thickening characteristics, the improvement comprising:

extruding the endosperms after hydrating but before grinding, said extruding performed either before or after the endosperms are flaked, and wherein the fluid thickener in powder form is disposed to hydrate faster than a corresponding powder made without the extruding step.

59. The method of claim 58, wherein the fluid thickener in powder form is disposed to comprise a hydration acceleration rate that is faster than a corresponding fluid thickener in powder form made without the extruding step.

60. The method of claim 58, wherein the fluid thickener in powder form is disposed to comprise a hydration acceleration rate that is slowed down less by lower temperature than a corresponding fluid thickener in powder form made without the extruding step.

61. The method of claim 58, wherein the fluid thickener in powder form is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F.

62. The method of claim 58, wherein the fluid thickener in powder form is disposed to achieve about 90% hydration after about 5 minutes at about 40 degrees F.

63. The method of claim 58, wherein the fluid thickener in powder form is disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F.

64. The method of claim 58, wherein the fluid thickener in powder form is disposed to achieve about 50% hydration after about 90 seconds at about 40 degrees F.

65. The method of claim 58, wherein the fluid thickener in powder form is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F and after about 5 minutes at about 40 degrees F, and wherein the fluid thickener in powder form is further disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F and after about 90 seconds at about 40 degrees F.

66. A method of manufacturing a powder having improved hydration characteristics, the method comprising the steps of:

- (a) hydrating guar gum splits, the guar gum splits disposed to comprise polygalactomannan, and wherein the splits are hydrated to about a 20%-80% moisture content at about 80-200 degrees F;
- (b) processing the hydrated splits, said processing step including the substeps, in either order, of flaking the splits and extruding the splits, and wherein the hydrated splits are extruded through a 2"-8" diameter barrel;
- (c) grinding said processed splits into a powder, the powder disposed to hydrate faster than a corresponding powder made without the extruding substep in step (b), and wherein the powder is further disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F and after about 5 minutes at about 40 degrees F, and wherein the powder further achieves about 50% hydration after about 60 seconds at about 70 degrees F and after about 90 seconds at about 40 degrees F;
- (d) drying the powder, and wherein the powder is dried to a 1%-10% moisture content; and
- (e) screening the powder through a 100 mesh sieve.

67. The method of claim 66, wherein the guar gum splits have been chemically modified.

68. The method of claim 66, wherein the guar gum splits have been genetically modified.

69. The method of claim 66, wherein the powder is disposed to comprise a hydration acceleration rate that is faster than a corresponding powder made without said extruding substep in step (b).

70. The method of claim 66, wherein the powder is disposed to comprise a hydration acceleration rate that is slowed down less by lower temperature than a corresponding powder made without said extruding substep in step (b).



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
MANJIT S. CHOWDHARY)
WALTER M. WHITE) Group Art Unit: 1712
Serial No.: 09/501,559) Examiner: Philip C. Tucker
Filed: February 9, 2000) Atty Docket: ECO530/4-2US
Title: IMPROVED HYDRATION OF GUAR) Confirmation No.: 4061
GUM POWDER)

APPEAL BRIEF

CERTIFICATE OF MAILING

I hereby certify that this paper or fee is being deposited with the United States Postal Service with sufficient postage as "FIRST CLASS MAIL" addressed to: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, this 21st day of November, 2003.



Randall C. Furlong, Reg. No. 35,144

Sir:

The applicants hereby submit an original and two copies of this *Appeal Brief* to the Board of Patent Appeals and Interferences in response to the *Final Office Action* mailed March 28, 2003. The Director is authorized to deduct \$165.00 for the fee for filing this *Appeal Brief* from Vinson & Elkins L.L.P. Deposit Account No. 22-0365/ECO530/4-2US/RCF. The *Notice of Appeal* was apparently received by the Office on July 21, 2003, so this *Appeal Brief* is due November 21, 2003, the filing date having been extended two months by the accompanying Petition for Extension of Time. The Director is hereby authorized to charge the required fee of \$210.00 to Vinson & Elkins L.L.P. Deposit Account No. 22-0365/ECO530/4-2US/RCF.

I. REAL PARTY IN INTEREST

The assignee of this application is Economy Mud Products Company.

II. RELATED APPEALS AND INTERFERENCES

No other appeals or interferences known to appellant will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-11, 27-32, 34-39, and 41-70 have been rejected and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

The amendment filed on January 22, 2003 has been entered. All previous amendments have also been entered.

V. SUMMARY OF INVENTION

Claims 1, 2, 27, 34, 41, 50, 58, and 66, and claims 3-11, 28-32, 35-39, 42-49, 51-57, 59-65, and 67-70 that depend therefrom, are generally directed to a process of improving the hydration characteristics of guar gum powder, and more specifically to a method including the step of extruding guar gum splits prior to grinding same so as to enable such improved hydration characteristics. *Written Description* at page 2, lines 2-5.

In particular, as described in the written description, in various illustrative embodiments, the inclusion of the step of **extruding** the hydrated splits in the manufacturing process has been

found to create a guar gum powder product which has **advantageous properties over the prior art**. These **advantageous properties** include (1) **increasing the hydration rate and hydration acceleration rate** of the guar gum powder without any corresponding change in particle size, and (2) **providing a hydration acceleration rate** that is less affected by cold temperatures. *Written Description* at page 4, lines 6-11 (emphasis added).

Extrusion is known to be a part of the manufacturing process of products from other crops such as wheat or corn. Where extrusion is used in such processes, however, its purpose is known to be for objectives totally unrelated to **improving hydration characteristics of the product**. Generally its purpose is to shape the product into a desired physical profile. *Written Description* at page 4, lines 12-16 (emphasis added).

It is therefore a technical **advantage** of the present invention to provide a process of making guar gum powder that **hydrates faster** and whose **hydration accelerates faster, than prior art powders** of corresponding particle size. The potential benefits of such a product to industrial and commercial applications are described in detail in the “background” section of th[e] disclosure. *Written Description* at page 4, lines 17-21 (emphasis added).

A further technical **advantage** of the present invention is that the inventive process provides a guar gum powder product whose **hydration acceleration rate** is less affected by cold temperatures. The potential benefits of such a product in cold environments are also described in detail in the “background” section. *Written Description* at page 4, lines 22-25 (emphasis added).

VI. ISSUE

Are claims 1-11, 27-32, 34-39, and 41-70 unpatentable under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 4,269,975 to Rutenberg et al. (“the Rutenberg et al. ’975 patent”),

either alone and/or further in view of U.S. Patent No. 5,646,093 to Dino (“the Dino ’093 patent”), U.S. Patent No. 5,990,052 to Harris (“the Harris ’052 patent”), and the portions of Applicants’ own specification cited by the Examiner?

VII. GROUPING OF CLAIMS

Finally rejected claims 1, 2, 27, 34, 41, 50, 58, and 66, and claims 3-11, 28-32, 35-39, 42-49, 51-57, 59-65, and 67-70 that depend therefrom, stand or fall together.

VIII. ARGUMENT

Claims 1-11, 27-32, 34-39, and 41-70 are not rendered obvious by the Rutenberg et al. ’975 patent, either alone and/or further in view of the Dino ’093 patent, the Harris ’052 patent, and the portions of Applicants’ own specification cited by the Examiner.

Each of independent claims 1, 2, 27, 34, 41, 50, 58 and 66 recites that the guar splits are subjected to *both* an extrusion step *and* a flaking step during processing. For example, independent claim 1 recites “processing the hydrated splits, said processing step including the substeps, in either order, of *flaking the splits and extruding the splits*” (emphasis added). Independent claims 2, 27, 34, 41, 50, 58, and 66 have similar recitations. Thus, each of these claims requires the limitations of both *extruding and flaking*. On page 4 of the *Written Description*, lines 6-11, Applicants state, regarding the *advantages* of both *extruding and flaking*, that:

The inclusion of the step of *extruding* the hydrated splits in the manufacturing process has been found to create a guar gum powder product which has *advantageous properties over the prior art*. These *advantageous properties* include (1) *increasing the hydration rate and hydration acceleration rate* of the guar gum powder without any corresponding change in particle size, and

(2) providing a **hydration acceleration** rate that is less affected by cold temperatures. *Written Description* at page 4, lines 6-11 (emphasis added).

Nothing in the Rutenberg et al. '975 patent teaches or suggests this processing of the hydrated splits, the processing step including the substeps, **in either order**, of **flaking the splits and extruding the splits**, as recited in claims 1, 2, 27, 34, 41, 50, 58 and 66. The Examiner acknowledges on page 2 of the *Final Office Action* mailed March 28, 2003, that "Rutenberg differs from the present invention in that the use of both flaking and extruding, in the preparation of the ground guar is not disclosed." Applicants agree with the Examiner on this point. However, the Examiner proceeds to allege that this limitation would be obvious in view of the Rutenberg et al. '975 patent because "combining such methods would not be patentable, since it would logically flow that the combination would produce the **same effect**, and would **supplement each other**" (emphasis added). On this point, Applicants respectfully disagree.

The Rutenberg et al. '975 patent primarily teaches the use of extruding the guar splits prior to the grinding of the guar splits (col. 6, lines 13-18). The Rutenberg et al. '975 patent does not disclose or even suggest **both extruding and flaking** the guar splits, much less that the **extruding and flaking** can be performed **in either order**, not least because **both extruding and flaking** are never disclosed as being performed **together** in any of the numerous examples given in the Rutenberg et al. '975 patent. Moreover, the Rutenberg et al. '975 patent actually *teaches away* from **both extruding and flaking** the guar splits by downplaying the effectiveness of the **flaking** step. For instance, in Example II, the Rutenberg et al. '975 patent compares the viscosity of guar gums prepared by **extruding** the guar splits prior to grinding with the viscosity of guar gums prepared conventionally by **flaking** the guar splits prior to grinding the guar splits, as in the

prior art (col. 5, line 67–col. 6, line 2, and col. 6, lines 22-68). “The results show that, although the use of flattening (*flaker*) rolls gives a gum with higher viscosity-producing properties than gum prepared without the flattening rolls, **the use of an extruder under the same operational conditions gives gums with much higher viscosity-producing properties**” (col. 7, lines 15-20) (emphasis added). Similarly, in Example III, the Rutenberg et al. ’975 patent compares **extruded** and **non-extruded** gums **similarly** processed using varied hydration conditions (time, temperature, and % water on splits), with the results showing “that the **extruded** guar gums **always have higher viscosities** than the **non-extruded** control guar gums even when the hydration conditions are varied and are not the optimum.” (col. 7, lines 30-33, and col. 8, lines 61-64) (emphasis added).

Likewise, in Example IV, the Rutenberg et al. ’975 patent “demonstrates that **extrusion**, even under varying **extruder** conditions which were not the optimum attainable, still produces gums with **improved** viscosity-producing properties,” with the results showing “that **extrusion always improves** the viscosity-producing properties of the resulting gums even when no die is present” (col. 8, line 66, to col. 9, line 2, and col. 9, lines 34-36) (emphasis added). Similarly, in Example VII, the Rutenberg et al. ’975 patent “demonstrates that sorting, used in our usual testing procedure for comparison of the viscosity values, is not necessary and that **extrusion improves** the viscosity-producing properties of the resulting unsorted gum,” with the result that “the screened gum had a viscosity slightly higher than the unscreened gum and that **extrusion considerably improved** the viscosity even when the product was not screened,” where “[i]t should be noted that the unscreened gum will usually have a lower viscosity” (col. 10, lines 17-21, and col. 10, lines 47-52)(emphasis added).

Lastly, in Example VIII, the Rutenberg et al. '975 patent "compares the viscosity evaluation procedure used in this specification with the viscosity evaluation procedure described in U.S. Patent No. 2,891,050 (Example [II]), i.e., a] patent which describes the **flaking** (**flattening**) process of the prior art," with the results showing "that the viscosity improvement was due to **extrusion** and not to the evaluation procedure used and that the values were **much higher** than those reported in U.S. Patent No. 2,891,050 for the **flaking** (**flattening**) method, i.e., 1025-2400 cps" (col. 10, lines 55-59, and col. 11, lines 17-21) (emphasis added). Notably absent in the Rutenberg et al. '975 patent is any disclosure, teaching, or even a hint of a suggestion or motivation of processing hydrated splits, with the processing step including the substeps, **in either order, of flaking the splits and extruding the splits**, as recited in the claims. Nor is there any evidence in the Rutenberg et al. '975 patent of any disclosure, teaching, or even a hint of a suggestion that processing hydrated splits, with the processing step including the substeps, **in either order, of flaking the splits and extruding the splits**, as recited in the claims, would have any reasonable expectation of success. To one of ordinary skill in the art, the teaching of the Rutenberg et al. '975 patent, taken as a whole, as it must, is unequivocal and clear, strongly **teaching away** from **flaking** and strongly teaching instead the advantages of **extruding** rather than **flaking**.

The teachings of a prior art reference **must be taken as a *whole* when evaluating obviousness rather than considered in bits and pieces.** *Panduit Corp. v. Dennison Mfg. Co.,* 1 U.S.P.Q.2d (BNA) 1593, 1597 (Fed. Cir.), cert. denied, — U.S. —, 107 S. Ct. 2187 (1987). "It is well settled that a prior art reference is relevant for **all** that it teaches one of ordinary skill in the art." *In re Fritch*, 23 U.S.P.Q.2d (BNA) 1780, 1782 (Fed. Cir. 1992) (emphasis added). There

can be **no motivation or suggestion to combine references as a matter of law** where one of the references *teaches away from the claimed invention*. *In re Fine*, 5 U.S.P.Q.2d (BNA) 1596, 1599 (Fed. Cir. 1988); *In re Gordon*, 221 U.S.P.Q. (BNA) 1125, 1127 (Fed. Cir. 1984). It is by now well established that **teaching away** by the prior art constitutes *prima facie* evidence that the claimed invention is **not obvious**. See, *inter alia*, *In re Fine*, 1599; *In re Nielson*, 2 U.S.P.Q.2d (BNA) 1525, 1528 (Fed. Cir. 1987); *In re Hedges*, 228 U.S.P.Q. (BNA) 685, 687 (Fed. Cir. 1986).

The Examiner attempts to supplement the Rutenberg et al. '975 patent by citing *In re Crockett*, 126 USPQ 186. However, the facts of *In re Crockett* are readily **distinguishable** from those of the present application. The prior art references at issue in *In re Crockett* "clearly teach that **both** magnesium oxide and calcium carbide, **individually**, promote the formation of a nodular structure in cast iron, and it would be natural to suppose that, **in combination**, they would produce **the same effect** and would **supplement each other**." *In re Crockett*, 126 USPQ 186, 188 (emphasis added). "Even assuming, as appellant alleges to be the case, that the two together produce an effect somewhat greater than the sum of their separate effects, we feel that **the idea of combining them would flow logically from the teaching of the prior art** and therefore that a claim to their joint use is not patentable. *In re Heinrich*, 46 CCPA 933, 268 F.2d 753, 122 USPQ 388, **and cases there cited**." *In re Crockett*, 126 USPQ 186, 188 (emphasis added). Moreover, *In re Heinrich*, and the cases cited there, namely, *In re Kepler*, 30 CCPA 726, 132 F.2d 130, 56 USPQ 177, and *In re Busch*, 45 CCPA 766, 251 F.2d 617, 116 USPQ 413, all stand for the proposition that a "patent should not be granted for appellant's discovery of a result

that would flow naturally *from the teachings of the prior art.*" *In re Kepler*, 56 USPQ 177, 180 (emphasis added).

Unlike the prior art references at issue in *In re Crockett*, the Rutenberg et al. '975 patent clearly teaches that "although the use of flattening (*flaker*) rolls gives a gum with higher viscosity-producing properties than gum prepared without the flattening rolls, **the use of an extruder under the same operational conditions gives gums with much higher viscosity-producing properties**" (col. 7, lines 15-20) (emphasis added). Therefore, the Rutenberg et al. '975 patent clearly teaches that *extruding*, under the *same operational conditions*, does *not give the same results as flaking*. Consequently, to one of ordinary skill in the art, referring to nothing other than the teachings of the Rutenberg et al. '975 patent, and without having the benefit of impermissible hindsight reconstruction based on the teachings of the present application, it would not be natural to suppose that, *in combination*, *flaking and extruding*, in either order, would produce the *same effect* and would *supplement* each other, nor would the idea of *combining flaking and extruding*, in either order, flow logically *from the teaching of the prior art*. Instead, to one of ordinary skill in the art, the Rutenberg et al. '975 patent strongly teaches that *extruding* is far more preferable than *flaking*, and, thus, it would flow logically *from the teaching of the Rutenberg et al. '975 patent* only to *extrude* and not to *flake* at all.

The MPEP at § 2144 states that legal precedent can provide the rationale supporting obviousness only if the facts in the case are sufficiently similar to those in the application:

The examiner must apply the law consistently to each application after considering all the relevant facts. If the facts in a prior legal decision are sufficiently similar to those in an application under examination, the examiner may use the rationale used by the court. If the applicant has demonstrated the criticality of a specific limitation, it would not be appropriate to rely solely on case law as the rationale to support an obviousness rejection. "The value of the

exceedingly large body of precedent wherein our predecessor courts and this court have applied the law of obviousness to particular facts, is that there has been built a wide spectrum of illustrations and accompanying reasoning, that have been melded into a fairly consistent application of law to a great variety of facts.” *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990).

The facts in *In re Crockett* are not **sufficiently similar** to those here. In *In re Crockett*, distinct references effectively taught that two different processes, A and B, would each produce the **same** result, so that process A and process B could then be **logically combined** to produce process A+B. Here, however, the Rutenberg et al. '975 patent **alone** effectively teaches that two different processes, **flaking** and **extruding**, each produce **very different** results, with **extruding** producing a result that is **far superior** to the result of **flaking**. One of ordinary skill in the art would therefore have had **no logical motivation** to **combine flaking together with extruding**. At best, **logically**, one of ordinary skill in the art would have expected such a combination to produce a result that was **inferior** to the result of **only extruding**. Consequently, one of ordinary skill in the art could **not** have had any **reasonable expectation of success** in **combining flaking together with extruding**, given the teachings of the Rutenberg et al. '975 patent and the **logical** inferences drawn therefrom.

The Examiner has alleged that “Applicant[s] ha[ve] not also shown any superior and unexpected results from the teachings of the specification, an affidavit or declaration to show that the properties of the present product are superior and unexpected, over the properties of the extruded product of Rutenberg, which could render the teachings therein nonobvious.” *Office Action* mailed March 28, 2003, at page 6 (underlined emphasis in original, bold emphasis added). Applicants respectfully disagree.

As described above, on page 4 of the *Written Description*, lines 6-11, Applicants state, regarding the *advantages* of both **extruding and flaking**, that:

The inclusion of the step of **extruding** the hydrated splits in the manufacturing process has been found to create a guar gum powder product which has **advantageous properties over the prior art**. These **advantageous properties** include (1) **increasing the hydration rate and hydration acceleration rate** of the guar gum powder without any corresponding change in particle size, and (2) **providing a hydration acceleration rate** that is less affected by cold temperatures. *Written Description* at page 4, lines 6-11 (emphasis added).

Regarding the Examiner's § 103(a) rejections of independent claims 1, 27, 34 and 66 as being allegedly unpatentable over the Rutenberg et al. '975 patent in view of the Dino '093 patent, the Harris '052 patent, and the portions of Applicants' specification cited by the Examiner, Applicants submit that, contrary to MPEP § 2143, the Examiner has failed to make out a *prima facie* case of obviousness in rejecting independent claims 1, 27, 34 and 66 in that (1) the Examiner has failed to cite references that teach or suggest all of the elements recited in the rejected claims, and (2) the Examiner has failed to articulate a suggestion to combine the references with a reasonable expectation of success.

Applicants respectfully submit that the Rutenberg et al. '975 patent does not teach or suggest the foregoing methods recited in claims 1, 27, 34 and 66 for all of the same reasons set forth above in regard to such claims. Moreover, contrary to MPEP §§ 2143.01 and 2143.02, the Examiner has failed to articulate a suggestion to combine the Rutenberg et al. '975 patent with the Dino '093 patent, the Harris '052 patent, and the portions of Applicants' specification cited by the Examiner. The *prima facie* case of obviousness is thus yet further lacking.

As described above, the Rutenberg et al. '975 patent discloses hydrating, extruding, and grinding guar splits to produce a guar gum (col. 6, lines 22-26). The Rutenberg et al. '975 patent

teaches that extruding the guar splits before grinding results in a guar gum with a higher viscosity than a guar gum produced by flaking the guar splits prior to grinding the guar splits (col. 5, line 65 to col. 6, lines 1-3; col. 7, lines 15-20). The Dino '093 patent teaches the use of reacting guar splits in a reactor with various chemicals to produce chemically altered guar products (col. 6, lines 5-28). The Harris '052 patent teaches the use of guar gum splits, water, and chemicals to form a gel comprising a chemically altered form of guar (col. 8, lines 35-38). Nothing in the Dino '093 patent and/or the Harris '052 patent teaches, discloses, or even suggests improving the hydration rate and hydration acceleration rate of a guar gum powder by **extruding and flaking** the guar splits. Moreover, nothing in Applicants' present specification teaches, discloses, or even suggests that improving the hydration rate and hydration acceleration rate of a guar gum powder by **extruding and flaking** the guar splits was well known in the art at the time the present application was filed.

Further, it is respectfully submitted that it would not have been obvious to modify the Rutenberg et al. '975 patent, the Dino '093 patent, the Harris '052 patent, and/or the portions of Applicants' specification cited by the Examiner to arrive at the invention recited by claims 1, 2, 27, 34, 41, 50, 58 and 66. It is well-settled that a reference must provide some motivation or reason for one skilled in the art (working without the benefit of hindsight reconstruction using the applicants' specification) to make the necessary changes in the disclosed device or method. The mere fact that a reference may be modified in the direction of the claimed invention does not make the modification obvious unless the reference expressly or impliedly teaches or suggests the desirability of the modification. *In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984); *Ex*

parte Clapp, 227 USPQ 972, 973 (Bd. App. 1985); *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. App. 1984). Indeed, the Federal Circuit stated:

... To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction--an illogical and inappropriate process by which to determine patentability. *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). The invention must be viewed not after the blueprint has been drawn by the inventor, but as it would have been perceived in the state of the art that existed at the time the invention was made. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed. Cir. 1985).

Sensonics Inc. v. Aerosonic Corp., 38 USPQ2d 1551, 1554 (Fed. Cir. 1996).

The Rutenberg et al. '975 patent, the Dino '093 patent, the Harris '052 patent, and/or the portions of Applicants' specification cited by the Examiner fail to meet the basic requirement for a finding of obviousness established by the courts in *Sensonics*, *Gordon*, *Clapp*, and *Chicago Rawhide*. There is no suggestion in the Rutenberg et al. '975 patent, the Dino '093 patent, the Harris '052 patent, and/or the portions of Applicants' specification cited by the Examiner to modify the processes disclosed therein in the direction of the present invention, nor is there any suggestion of the desirability of such modifications (*i.e.*, processing the hydrated splits, the processing step including the substeps, **in either order**, of *flaking the splits* and *extruding the splits*). In fact, the Rutenberg et al. '975 patent actually **teaches away** from the inclusion of the flaking step in the process by downplaying the viscosity-enhancing effects of the flaking step. (col. 7, lines 15-20). Thus, it is respectfully submitted that the ordinarily skilled artisan would have had no motivation to modify the references as suggested by the Examiner.

Moreover, independent claim 41 recites "processing the hydrated splits, said processing step including the substeps, **in either order**, of *flaking the splits* and *extruding the splits*" and

“grinding said processed splits into a powder, the powder disposed to *hydrate faster* than a corresponding powder made without the extruding substep” (emphasis added). Claims 50, 58, and 66 have similar recitations. The Rutenberg et al. ’975 patent, the Dino ’093 patent, the Harris ’052 patent, and/or the portions of Applicants’ specification cited by the Examiner do not disclose, teach or suggest processing the hydrated splits, the processing step including the substeps, in either order, of *flaking* the splits and *extruding* the splits and grinding said processed splits into a powder, the powder disposed to *hydrate faster* than a corresponding powder made without the extruding substep, as recited in the claims.

The Examiner admits that the Rutenberg et al. ’975 patent “does not teach the hydration rate properties at specific temperatures disclosed in claims 41-70.” *Final Office Action* mailed March 28, 2003, at page 3. The Examiner attempts to supplement the Rutenberg et al. ’975 patent by citing *In re Dillon*, 16 USPQ2d 1897. In particular, the Examiner makes reference to:

... There is no question that all evidence of the properties of the claimed compositions and the prior art must be considered in determining the ultimate question of patentability, but it is also clear that the discovery that a claimed composition possesses a property not disclosed for the prior art subject matter, does not by itself defeat a *prima facie* case. [In re] Shetty, 566 F.2d [81,] 86, 195 USPQ [753,] 756. Each situation must be considered on its own facts, but it is not necessary in order to establish a *prima facie* case of obviousness that both a structural similarity between a claimed and prior art compound (or a key component of a composition) be shown and that there be a suggestion in or expectation from the prior art that the claimed compound or composition will have the same or a similar utility as *one newly discovered by applicant*.

In re Dillon, 16 USPQ2d at 1901 (italic emphasis in original, bold emphasis added).

However, the facts of *In re Dillon* are readily distinguishable from those of the present application. The claims at issue in *In re Dillon* were claims to a compound or a composition, *not* method claims, like all the claims on appeal here. Indeed, in the *Office Action* mailed

October 22, 2002, the Examiner stated that “[T]he increasing of hydration rates is a property which according to case law (*In re Dillon*, *supra*) does not alone provide a patentable distinction” and that “Applicant is *not* claiming a *method* in which such might be distinguishing.” *Office Action* mailed October 22, 2002 at page 6 (underline emphasis in original, bold emphasis added). Applicants respectfully disagree. Unlike in *In re Dillon*, here Applicants are claiming a *method* in which such is distinguishing, the Examiner’s assertions to the contrary notwithstanding.

As described above, the MPEP at § 2144 states that legal precedent can provide the rationale supporting obviousness **only** if the facts in the case are **sufficiently similar** to those in the application. The facts in *In re Dillon* are not **sufficiently similar** to those here. In *In re Dillon*, the Federal Circuit stated:

We make no judgment as to the patentability of claims that Dillon might have made and properly argued to a method directed to the novel aspects of her invention. ... The materials used in a **claimed process as well as the result obtained therefrom**, must be considered along with the specific nature of the process, and the fact that new or old, obvious or nonobvious, materials are used or result from the process are only factors to be considered, rather than conclusive indicators of the obviousness or nonobviousness of a **claimed process**. When **any** applicant properly presents and argues suitable *method* claims, they should be examined in light of all these relevant factors.

In re Dillon, 16 USPQ2d at 1903 (emphasis added). As described above, independent claim 41 recites “processing the hydrated splits, said processing step including the substeps, in either order, of *flaking* the splits and *extruding* the splits” and “grinding said processed splits into a powder, the powder disposed to *hydrate faster* than a corresponding powder made without the extruding substep” (emphasis added). Claims 50, 58, and 66 have similar recitations. Unlike in *In re Dillon*, here Applicants have properly presented and argued suitable *method* claims. Moreover, the Rutenberg et al. ’975 patent, the Dino ’093 patent, the Harris ’052

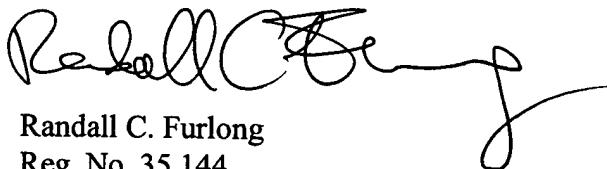
patent, and/or the portions of Applicants' specification cited by the Examiner do not disclose, teach or suggest processing the hydrated splits, the processing step including the substeps, **in either order**, of *flaking* the splits and *extruding* the splits and grinding said processed splits into a powder, **the powder disposed to hydrate faster than a corresponding powder made without the extruding substep**, as recited in the claims. Thus, it is respectfully submitted that the ordinarily skilled artisan would have had no motivation to modify the references as suggested by the Examiner, in view of *In re Crockett*, and/or *In re Dillon*, and/or otherwise.

Therefore, for all the above reasons, Applicants respectfully request that the rejection of claims 1, 2, 27, 34, 41, 50, 58, and 66, and claims 3-11, 28-32, 35-39, 42-49, 51-57, 59-65, and 67-70 that depend therefrom, under 35 U.S.C. §103(a) be reversed.

Conclusion.

The applicants contend that the prior art does not render obvious any of the pending claims. The applicants respectfully request that the rejections of all of the claims be reversed.

Respectfully submitted,



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APPENDIX

Claims involved in this appeal:

1. A method of manufacturing a powder having improved hydration characteristics, the method comprising the steps of:
 - (a) hydrating guar gum splits;
 - (b) processing the hydrated splits, said processing step including the substeps, in either order, of flaking the splits and extruding the splits;
 - (c) grinding said processed splits into a powder; and
 - (d) drying the powder.
2. A method of manufacturing a powder having improved hydration characteristics, the method comprising the steps of:
 - (a) hydrating guar gum splits, in which the guar gum splits comprise polygalactomannan;
 - (b) processing the hydrated splits, said processing step including the substeps, in either order, of flaking the splits and extruding the splits;
 - (c) grinding said processed splits into a powder; and
 - (d) drying the powder.
3. The method of claim 1, in which the guar gum splits have been chemically modified.
4. The method of claim 1, in which the guar gum splits have been genetically modified.
5. The method of claim 1, further including the step of screening the powder after drying.
6. The method of claim 1, in which:
the splits are hydrated in step (a) to about a 20%-80% moisture content at about 80-200 degrees F;

the hydrated splits are extruded in step (b) through a 2"-8" diameter barrel; and the powder is dried in step (d) to a 1%-10% moisture content.

7. The method of claim 6, in which said dried powder is then screened through a 100 mesh sieve.

8. The method of claim 1, in which the splits are hydrated in step (a) to about a 20%-80% moisture content at about 80-200 degrees F.

9. The method of claim 1, in which the hydrated splits are extruded in step (b) through a 2"-8" diameter barrel.

10. The method of claim 1, in which the powder is dried in step (d) to a 1%-10% moisture content.

11. The method of claim 2, in which the powder is screened in said screening step through a 100 mesh sieve.

27. A method of manufacturing a thickening agent for fluids, the method comprising the steps of:

- (a) hydrating plant seed endosperms that contain a polymer having fluid thickening properties;
- (b) processing the hydrated endosperms, said processing step including the substeps, in either order, of flaking the endosperms and extruding the endosperms;
- (c) grinding said processed endosperms into a powder; and
- (d) drying the powder.

28. The method of claim 27, in which the plant seed endosperms are taken from guar plants.

29. The method of claim 27, in which said polymer is a polysaccharide.

30. The method of claim 27, in which said polymer is polygalactomannan.

31. The method of claim 27, in which the plant seed endosperms have been chemically modified.

32. The method of claim 27, in which the plant seed endosperms have been genetically modified.

34. An improved method for manufacturing a fluid thickener in powder form wherein plant seed endosperms are hydrated, flaked, ground and dried, the endosperms containing a polymer having fluid thickening characteristics, the improvement comprising:

extruding the endosperms after hydrating but before grinding, said extruding performed either before or after the endosperms are flaked.

35. The improvement of claim 34, in which the plant seed endosperms are taken from guar plants.

36. The improvement of claim 34, in which said polymer is a polysaccharide.

37. The improvement of claim 34, in which said polymer is polygalactomannan.

38. The improvement of claim 34, in which the plant seed endosperms have been chemically modified.

39. The improvement of claim 34, in which the plant seed endosperms have been genetically modified.

41. A method of manufacturing a powder having improved hydration characteristics, the method comprising the steps of:

- (a) hydrating guar gum splits;
- (b) processing the hydrated splits, said processing step including the substeps, in either order, of flaking the splits and extruding the splits;
- (c) grinding said processed splits into a powder, the powder disposed to hydrate faster than a corresponding powder made without the extruding substep in step (b); and
- (d) drying the powder.

42. The method of claim 41, wherein the powder is disposed to comprise a hydration acceleration rate that is faster than a corresponding powder made without the extruding substep in step (b).

43. The method of claim 41, wherein the powder is disposed to comprise a hydration acceleration rate that is slowed down less by lower temperature than a corresponding powder made without the extruding substep in step (b).

44. The method of claim 41, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F.

45. The method of claim 41, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 40 degrees F.

46. The method of claim 41, wherein the powder is disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F.

47. The method of claim 41, wherein the powder is disposed to achieve about 50% hydration after about 90 seconds at about 40 degrees F.

48. The method of claim 41, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F and after about 5 minutes at about 40 degrees F, and wherein the powder is further disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F and after about 90 seconds at about 40 degrees F.

49. The method of claim 41, further including the step of screening the powder after drying.

50. A method of manufacturing a thickening agent for fluids, the method comprising the steps of:

- (a) hydrating plant seed endosperms that contain a polymer having fluid thickening properties;
- (b) processing the hydrated endosperms, said processing step including the substeps, in either order, of flaking the endosperms and extruding the endosperms;
- (c) grinding said processed endosperms into a powder, the powder disposed to hydrate faster than a corresponding powder made without the extruding substep in step (b); and
- (d) drying the powder.

51. The method of claim 50, wherein the powder is disposed to comprise a hydration acceleration rate that is faster than a corresponding powder made without the extruding substep in step (b).

52. The method of claim 50, wherein the powder is disposed to comprise a hydration acceleration rate that is slowed down less by lower temperature than a corresponding powder made without the extruding substep in step (b).

53. The method of claim 50, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F.

54. The method of claim 50, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 40 degrees F.

55. The method of claim 50, wherein the powder is disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F.

56. The method of claim 50, wherein the powder is disposed to achieve about 50% hydration after about 90 seconds at about 40 degrees F.

57. The method of claim 50, wherein the powder is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F and after about 5 minutes at about 40 degrees F, and wherein the powder is further disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F and after about 90 seconds at about 40 degrees F.

58. An improved method for manufacturing a fluid thickener in powder form wherein plant seed endosperms are hydrated, flaked, ground and dried, the endosperms containing a polymer having fluid thickening characteristics, the improvement comprising:

extruding the endosperms after hydrating but before grinding, said extruding performed either before or after the endosperms are flaked, and wherein the fluid thickener in powder form is disposed to hydrate faster than a corresponding powder made without the extruding step.

59. The method of claim 58, wherein the fluid thickener in powder form is disposed to comprise a hydration acceleration rate that is faster than a corresponding fluid thickener in powder form made without the extruding step.

60. The method of claim 58, wherein the fluid thickener in powder form is disposed to comprise a hydration acceleration rate that is slowed down less by lower temperature than a corresponding fluid thickener in powder form made without the extruding step.

61. The method of claim 58, wherein the fluid thickener in powder form is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F.

62. The method of claim 58, wherein the fluid thickener in powder form is disposed to achieve about 90% hydration after about 5 minutes at about 40 degrees F.

63. The method of claim 58, wherein the fluid thickener in powder form is disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F.

64. The method of claim 58, wherein the fluid thickener in powder form is disposed to achieve about 50% hydration after about 90 seconds at about 40 degrees F.

65. The method of claim 58, wherein the fluid thickener in powder form is disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F and after about 5 minutes at about 40 degrees F, and wherein the fluid thickener in powder form is further disposed to achieve about 50% hydration after about 60 seconds at about 70 degrees F and after about 90 seconds at about 40 degrees F.

66. A method of manufacturing a powder having improved hydration characteristics, the method comprising the steps of:

- (a) hydrating guar gum splits, the guar gum splits disposed to comprise polygalactomannan, and wherein the splits are hydrated to about a 20%-80% moisture content at about 80-200 degrees F;
- (b) processing the hydrated splits, said processing step including the substeps, in either order, of flaking the splits and extruding the splits, and wherein the hydrated splits are extruded through a 2"-8" diameter barrel;
- (c) grinding said processed splits into a powder, the powder disposed to hydrate faster than a corresponding powder made without the extruding substep in step (b), and wherein the powder is further disposed to achieve about 90% hydration after about 5 minutes at about 70 degrees F and after about 5 minutes at about 40 degrees F, and wherein the powder further achieves about 50% hydration after about 60 seconds at about 70 degrees F and after about 90 seconds at about 40 degrees F;
- (d) drying the powder, and wherein the powder is dried to a 1%-10% moisture content; and
- (e) screening the powder through a 100 mesh sieve.

67. The method of claim 66, wherein the guar gum splits have been chemically modified.

68. The method of claim 66, wherein the guar gum splits have been genetically modified.

69. The method of claim 66, wherein the powder is disposed to comprise a hydration acceleration rate that is faster than a corresponding powder made without said extruding substep in step (b).

70. The method of claim 66, wherein the powder is disposed to comprise a hydration acceleration rate that is slowed down less by lower temperature than a corresponding powder made without said extruding substep in step (b).